***CLASSROOM COPY – DO NOT WRITE ON THIS!!!***

**CW#72H:** Complex Perimeter & Area

Honors Geometry

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| **CRS** | MEA 601 - Use relationships involving area, perimeter, and volume to compute another measure |
| **Objective** | 11.1 Find the perimeter of a figure with several unknown side lengths **;**11.2 Find the perimeter of a figure that involves circumference or part of a circle; 11.3 Given algebraic expressions for the perimeter of a figure, find a) variable, b) dimensions, c) area |

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| 1) Given a perimeter of 36 units, create at least 3 quadrilaterals that yield different areas.   1. What dimensions **minimize** area? 2. What dimensions **maximize** area?   **\*Given a fixed perimeter, what shape maximizes area?** |

**I. Area** 🡪 **Perimeter, Perimeter** 🡪 **Area**

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| **1)** Jesus has 400 feet of fence for a rectangular backyard play area for his dog. What is the largest area Jesus can have for his dog’s play area? | **2)** A farmer who owned a 20-yard-by-40-yard plot of land purchased more property such that the area doubled. The 40-yard length of the plot increased by 10 yards. How much must the 20-yard width have increased? |
| **II. Perimeter/Side of Geometric Figure 🡪 Other Geometric Figure** | |
| 3) The diameter of a circle and the hypotenuse of an isosceles right triangle have the same length. What is the circumference of the circle if the length of one of the legs of the isosceles right triangle is 7 in.  Exact answer: Approximate answer: | 4) The circumference of a circle and the perimeter of an equilateral triangle are the same. If the radius of the circle is 4 cm, what is the length of the side of the triangle?  Exact answer: Approximate answer: |
| 5) A rectangle and a square have the same perimeter. If one side of the square is 6 inches, and the length of the rectangle is 4 inches, what is the width of the rectangle? | 6) The short leg in a 30-60-90 has the same length as one side of a square. If the long leg is 6 ft long, what is the area of the square? |
| 7) A 162 cubic centimeter prism has a 6 cm length and 9 cm height. What is the width? | 8) A square and a right triangle share the same perimeter. The right triangle has a 26 cm hypotenuse and a 10 cm leg. What is the length of one of one side of the square? |

**Practice Quiz Questions:**

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| 9) A [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) is shown in the diagram below. If the [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) is 105, what are the rectangle's dimensions and what is its perimeter?  http://www.algebralab.org/img/1115f1e6-a803-40da-abf4-fa396ea21c9b.gif | 10) As shown in the following diagram, a rectangle's [length](javascript:def('/Glossary/glossaryterm.aspx?word=Length',%20500,%20500);) is 2x + 1 and its width is  2x – 1. If its [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) is 15 cm2, what are the rectangle's dimensions and what is its perimeter?  http://www.algebralab.org/img/fe280d1e-45ba-4de6-aec1-d66b93f406d4.gif |
| 11) A [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) is shown in the diagram below. If the [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) is 105, what are the rectangle's dimensions and what is its perimeter?  http://www.algebralab.org/img/1115f1e6-a803-40da-abf4-fa396ea21c9b.gif | 12) As shown in the following diagram, a rectangle's [length](javascript:def('/Glossary/glossaryterm.aspx?word=Length',%20500,%20500);) is 2x + 1 and its width is  2x – 1. If its [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) is 15 cm2, what are the rectangle's dimensions and what is its perimeter?  http://www.algebralab.org/img/fe280d1e-45ba-4de6-aec1-d66b93f406d4.gif |
| 13) A [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) has a [length](javascript:def('/Glossary/glossaryterm.aspx?word=Length',%20500,%20500);) of 8 and a diagonal of 10. What are the [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) and [perimeter](javascript:def('/Glossary/glossaryterm.aspx?word=Perimeter',%20500,%20500);) of this rectangle? **Draw a picture to help you.** | 14) A [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) has a diagonal which is 3 times the width. If the [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) is http://www.algebralab.org/img/9cb4e30d-8fbb-4ec7-96ce-0a9237ae0d47.gifwhat are the width and [perimeter](javascript:def('/Glossary/glossaryterm.aspx?word=Perimeter',%20500,%20500);) of this rectangle? |
| 15) A [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) has a [length](javascript:def('/Glossary/glossaryterm.aspx?word=Length',%20500,%20500);) that is 2 less than 3 times the width. If the [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) of this [rectangle](javascript:def('/Glossary/glossaryterm.aspx?word=Rectangle',%20500,%20500);) is 16, find the dimensions and the perimeter. | |
| 16) Given the figure below, find the perimeter.  15  10  14 | 17) Suppose a [triangle](javascript:def('/Glossary/glossaryterm.aspx?word=Triangle',%20500,%20500);) with [area](javascript:def('/Glossary/glossaryterm.aspx?word=Area',%20500,%20500);) 28 has a [base](javascript:def('/Glossary/glossaryterm.aspx?word=Base',%20500,%20500);) of 7x and a [height](javascript:def('/Glossary/glossaryterm.aspx?word=Height',%20500,%20500);) of 4x as shown in the diagram below. What are the **dimensions** of this triangle?  http://www.algebralab.org/img/94af596d-ff63-4b3e-8664-78b0edffef20.gif |
| [image]9) Given the figure below, what is the approximated area of the heptagon if you were to count the squares? | 10) Estimate the area of the circle by counting the squares.  [image] |